

# PATENT ABSTRACTS OF JAPAN

(11)Publication number : **2001-109713**

(43)Date of publication of application : **20.04.2001**

(51)Int.Cl. **G06F 15/00**  
**G06F 3/00**  
**H04Q 7/38**

(21)Application number : **11-284765**

(71)Applicant : **KENWOOD CORP**

(22)Date of filing : **05.10.1999**

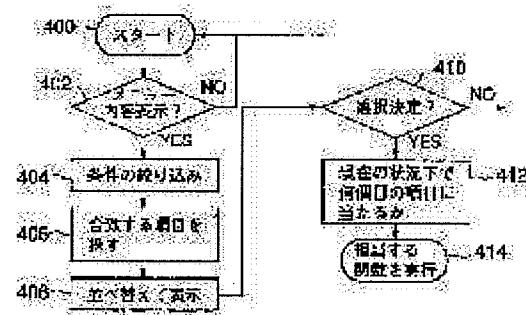
(72)Inventor : **MORISHITA KAZUNORI  
TSUCHIYA SHIGEMASA**

## (54) PORTABLE INFORMATION TERMINAL

### (57)Abstract:

PROBLEM TO BE SOLVED: To provide a portable information terminal which makes menu items readily understandable so as to prevent the confusion of a user.

SOLUTION: When an operating part inputs an instruction to display the menu items (step 402), this portable information terminal narrows a condition down by checking the set condition/state of a main body (step 404). The terminal retrieves menu items coinciding with function/set items whose attributes are decided as effective (step 406), rearranges the detected menu items and displays the menu items on a displaying part 107 (step 408). When any of the menu items displayed on the displaying part is selected and decided (step 410), the terminal calculates what order of a menu item 200 the decided menu item is under the present situation (step 412). The terminal accesses a processing function corresponding to the menu item after the calculation and executes a program (step 414).



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**[Claim(s)]**

[Claim 1]In a personal digital assistant which can carry out input selection of the setting-out item function or set up to have the menu item made to correspond to a function and a setting-out item, display said menu item on an indicator, and perform out of said displayed menu item, A personal digital assistant, wherein the number of menu items or the contents of a menu item change according to setups or a terminal state of said information terminal.

[Claim 2]A personal digital assistant characterized by said terminal state being an electric wave (exhaust air) state or a net service state in the personal digital assistant according to claim 1.

[Claim 3]A personal digital assistant characterized by said setups being what depended on contractual coverage or an user set with an entrepreneur in the personal digital assistant according to claim 1.

[Claim 4]A personal digital assistant, wherein said menu item related with said function and said setting-out item has the attribution information which consists of combination of a setting condition of a terminal respectively in the personal digital assistant according to claim 1.

[Claim 5]A personal digital assistant, wherein said menu item enables change of the order of a row in the personal digital assistant according to claim 1.

[Claim 6]A personal digital assistant if rearrangement operation of said menu item is performed in the personal digital assistant according to claim 5, wherein a processing function corresponding to attribution information and a menu item which consist of combination of a setting condition of said information terminal will also interchange.

[Claim 7]A personal digital assistant memorizing effective and invalidity for said every setting-out item, and displaying only an effective menu item or a setting-out item in the personal digital assistant according to claim 1.

[Claim 8]A personal digital assistant which can carry out input selection of the setting-out item function or set up to have the menu item made to correspond to a function and a setting-out item

characterized by comprising the following, display said menu item on an indicator, and perform out of said displayed menu item.

A memory measure which memorizes that said function or said setting-out item is invalid when it cannot memorize that said function or said setting-out item is effective when said function can set up execution possibility of or said setting-out item and said function cannot set up an execution impossibility or said setting-out item.

A search means to search said function which is effective at the time of input selection, and said setting-out item from said memory measure.

An indicator which displays only said effective function and said setting-out item.

A final controlling element to which input selection of the setting-out item which is performed out of said displayed function and said setting-out item, and which is functioned or set up is made.

An execution means which performs a function in which input selection was made by said final controlling element.

A setting-out means to set up a setting-out item in which input selection was made by said final controlling element.

[Claim 9]The personal digital assistant comprising according to claim 8:

A final controlling element which carries out input specification of the display order when displaying said effective function and said setting-out item on said indicator.

An indicator which displays said function and said setting-out item based on said display order by which input specification was carried out.

A final controlling element to which input selection of the setting-out item which is performed out of said displayed function and said setting-out item, and which is functioned or set up is made.

An execution means which performs a function in which input selection was made by said final controlling element.

A setting-out means to set up a setting-out item in which input selection was made by said final controlling element.

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**[Detailed Description of the Invention]****[0001]**

**[Field of the Invention]**This invention relates to a personal digital assistant, and it is related with the personal digital assistant which can carry out input selection of the setting-out item function or set up to display on an indicator the menu item made to correspond to a function and a setting-out item, and perform out of the displayed menu item in details more.

**[0002]**

**[Description of the Prior Art]**the conventional personal digital assistant can set up each setting-out item which can use each function and which is not made (invalid) (effective) -- it was not concerned for the ability not to do (effective) (invalid), but the menu item was displayed.

**[0003]**

**[Problem(s) to be Solved by the Invention]**However, since the function which a function and a setting-out item cannot actually use according to setups, a terminal state, etc., and a setting-out item were also included in a menu item, a menu item increases, and it becomes complicated and was easy to cause the user's confusion. This invention makes a menu item legible, without displaying an unnecessary menu screen, and an object of this invention is to provide the personal digital assistant which cannot cause a user's confusion easily.

**[0004]**

**[Means for Solving the Problem]**A personal digital assistant by this invention is constituted as a personal digital assistant, wherein the number of menu items or the contents of a menu item change according to setups or a terminal state of an information terminal, in order to attain the above-mentioned purpose. A terminal state of a personal digital assistant by this invention is characterized by being an electric wave (exhaust air) state or a net service state. Setups of a personal digital assistant by this invention are characterized by being what is depended on contractual coverage or an user set with an entrepreneur. A menu item related with a function of a personal digital assistant

by this invention and a setting-out item has the attribution information which consists of combination of a setting condition of a terminal respectively. A menu item of a personal digital assistant by this invention enabled change of the order of a row. If rearrangement operation of a menu item of a personal digital assistant by this invention is performed, a processing function corresponding to attribution information and a menu item which consist of combination of a setting condition of an information terminal will also interchange. Effective and invalidity are memorized for every setting-out item of a personal digital assistant by this invention, and only an effective menu item or a setting-out item is displayed.

[0005]When a function can set up execution possibility of or a setting-out item, a personal digital assistant by this invention, When it cannot memorize that a function or a setting-out item is effective and a function cannot set up an execution impossibility or a setting-out item, A memory measure which memorizes that a function or a setting-out item is invalid, and a search means to search a function which is effective at the time of input selection, and a setting-out item from a memory measure, An indicator which displays only an effective function and a setting-out item, and a final controlling element to which input selection of the setting-out item which is performed out of a displayed function and a setting-out item, and which is functioned or set up is made, It had an execution means which performs a function in which input selection was made by final controlling element, and a setting-out means to set up a setting-out item in which input selection was made by final controlling element.

[0006]A final controlling element which carries out input specification of the display order in case a personal digital assistant by this invention displays an effective function and a setting-out item on an indicator, An indicator which displays a function and a setting-out item based on display order by which input specification was carried out, It had a final controlling element to which input selection of the setting-out item which is performed out of a displayed function and a setting-out item, and which is functioned or set up is made, an execution means which performs a function in which input selection was made by final controlling element, and a setting-out means to set up a setting-out item in which input selection was made by final controlling element.

[0007]

[Embodiment of the Invention]Next, with reference to drawing 1 - 7, the embodiment of the personal digital assistant by this invention is described in detail. Drawing 1 is an entire configuration figure showing the personal digital assistant by this invention. Drawing 2 - 5 are the figures explaining a 1st embodiment by this invention, drawing 2 and drawing 5 are the lineblock diagrams of the memory for memory of line menu information, and drawing 3 is a figure showing an example of the menu item displayed on the indicator of the personal digital assistant as a 1st embodiment by this invention. Drawing 4 is a process flow figure of the personal digital assistant by this invention. Drawing 6 and drawing 7 are the figures explaining a 2nd embodiment by this invention, drawing 6 is a lineblock diagram of the memory for memory of line menu information, and drawing 7 is a process flow figure of

the personal digital assistant by this invention.

[0008]As shown in drawing 1, in addition to CPU101, ROM103, RAM105, the baseband 111, and RF section 113, the personal digital assistant by this invention is provided with the codec 119, Media Interface Connector(microphone) 115, SP(loudspeaker) 117, the indicator 107, and the key 109. Control of the whole personal digital assistant is performed by CPU101. In ROM103, system data, such as an execution program which performs each function of a main part, and terminal information, are stored, and RAM105 is used as a work area and stores a variable etc. In addition, RF section 113 transmits and receives a radio signal, the baseband part 111 performs the abnormal conditions and recovery of transmission and reception signals, and an A/D conversion (analog to digital) and D/A conversion (digital to analog) are performed by the codec 119. Media Interface Connector115 is equivalent to a voice input part, and SP117 is equivalent to a voice output part. The function with which the main part besides each information with which a main part is provided was equipped, and a setting-out item are displayed on the indicator 107. The key 109 is used when a user inputs and chooses the setting-out item which is performed out of the function displayed on the indicator 107, and a setting-out item and which is functioned or set up.

[0009]Corresponding to each menu item 200, the attribution information which changes with the setups and states of a main part, and the processing function 210 are illustrated by drawing 2. The menu item 200 is related with function / setting-out item. The setups and the state of a main part change for every user with contractual coverage with an entrepreneur, etc., and changes also with the condition of use (an electric wave (exhaust air) state and a net service state) of a main part. For example, when a radio wave state is bad, the item related to e-mail transmission and reception can also be automatically removed from a menu item. Automatic deletion of the unnecessary menu item in the area where the service network is not built is also possible. The situation 201 - 2XX are defined by the combination of an attribute.

[0010]The menu item 200 has attribution information in the inside respectively, and x is used for O and the menu item which is invalid as the attribution information in drawing 2 at the menu item 200 which is effective. The processing function 210 supports each menu item 200. And if each menu item 200 is chosen, the processing function 210 corresponding to the menu item 200 is called, and it has the composition that the program concerned is executed. As an example, the menu item displayed on drawing 3 (a) by the indicator 107 at the time of situation \*\*201 and the menu item displayed on the indicator 107 at the time of situation \*\*202 by drawing 3 (b) are shown.

[0011]the attribute of direct delivery mail (form of transmitting character mail to a mating terminal and hanging up a telephone), chat mails (form of exchanging e-mail without hanging up a telephone even after transmitting character mail to a mating terminal), and waiting BOX for transmission is effective at situation \*\*201 of drawing 2 -- (O) -- it has become. Therefore, only three items of direct delivery mail, chat mails, and waiting BOX for transmission of the menu item 200 are displayed on drawing 3 (a). Menu items 200 other than these become non-display.

[0012]Similarly by situation \*\*202 of drawing 2, it adds to direct delivery mail, chat mails, and waiting BOX for transmission (in order to hold transmitting mail temporarily), An information service (a variety of information comes to hand from a mail center), center transmission, and center transmission and reception (e-mail is received for e-mail from transmission or a center to a mail center) are effective. Therefore, six items of direct delivery mail, chat mails, waiting BOX for transmission, an information service, center transmission, and center transmission and reception of the menu item 200 are displayed on drawing 3 (b).

[0013]The processing function 210 is matched with each menu item 200, direct delivery mail -- the function 17 supports [ at the function 14 and center transmission ] the function 12 and chat mails in the function 13 and the information service in the function 16 and center transmission and reception at the function 15 and waiting BOX for transmission, respectively. These processing functions 210 will be called if the matched menu item 200 is chosen, and the program concerned is executed.

[0014]The flow of the internal processing of the personal digital assistant explained above is explained using the process flow figure of drawing 4. If the directions for displaying the introduction menu item 200 are inputted from a final controlling element (in this case, key 109) (Step 402), the setups and the state of a main part will be seen, and conditions will be narrowed down (Step 404). When there are no directions for displaying the menu item 200, it returns to the head of a program (Step 400). The menu item 200 which agrees with function / setting-out item judged that an attribute is effective is searched after narrowing down (Step 404) (Step 406), the detected menu item 200 is rearranged, and it displays on the indicator 107 (Step 408).

[0015]If selection decision of one of the menu items 200 displayed on the indicator 107 is carried out (Step 410), it will be computed the how many menu items 200 it hits under the present situation (Step 412). On the other hand, when neither of the menu item 200 is chosen, it returns to (Step 410) and the head of a program (Step 400). After calculation (Step 412), the processing function 210 equivalent to the menu item 200 concerned is called, and a program is executed (Step 414). This is explained using drawing 2 and drawing 3.

[0016]It is assumed that the information service was chosen among the menu items of drawing 3 (b). Under situation \*\*202 of drawing 2, an information service hits the 3rd menu item 200. As shown in drawing 2, the processing function 210 with which the attribute is related with the menu item 200 which is validity (O) under situation \*\*202 is six of the functions 12-17. And it understands that it is the function 14 that it is equivalent to the 3rd processing function 210 from a top. Therefore, the function 14 is called based on the process flow shown in drawing 4, and the program concerned is executed. According to this invention, by a user, it can stand in a line and the order of a row of the displayed menu item 200 can be changed. It is drawing 5 which showed this.

[0017]If the turn of chat mails and direct delivery mail is replaced as shown in drawing 5, in connection with it, the situation 503 - 5XX will also interchange and the turn of the function 12 and the function 13 will also interchange. The menu item displayed on the indicator 107 at the time of

situation \*\*502 by said exchange is shown in drawing 3 (c). It is assumed that chat mails were chosen from the menu items of drawing 3 (c). As shown in drawing 5, the processing function 510 with which the attribute is related with the menu item 500 which is validity (O) under situation \*\*502 is six, the function 13, the function 12, and the functions 14-17. A top shows that it is the function 13 that it is equivalent to the 1st processing function 510. Therefore, the function 13 is called based on the process flow shown in drawing 4, and the program concerned is executed.

[0018]Next, a 2nd embodiment by this invention is described. Corresponding to the menu item 600, the attribution information which changes with the setups and states of a main part, and the processing function 610 are illustrated by drawing 6. The menu item 600 is related with function / setting-out item, and the serial number (key number) 620 is given to each menu item 600. The setups and the state of a main part change for every user with contractual coverage with an entrepreneur, etc., and changes also with the condition of use (an electric wave (exhaust air) state and a net service state) of a main part. For example, when a radio wave state is bad, the item related to e-mail transmission and reception can also be automatically removed from a menu item. Automatic deletion of the unnecessary menu item in the area where the service network is not built is also possible. The situation 601 - 6XX are defined by the combination of an attribute.

[0019]The menu item 600 has attribution information in the inside respectively, and x is used for O and the menu item 600 which is invalid as the attribution information in drawing 2 at the menu item 600 which is effective. If the processing function 610 supports each number 620 given to each menu item 600 and each menu item 600 is chosen, the number 620 given to the menu item 600 concerned and the corresponding processing function 610 are called, and it has the composition that the program concerned is executed.

[0020]The flow of the internal processing of the personal digital assistant explained above is explained using the process flow figure of drawing 7. If the directions for displaying the introduction menu item 600 are inputted from a final controlling element (in this case, key 109) (Step 702), the setups and the state of a main part will be seen, and conditions will be narrowed down (Step 704). When there are no directions for displaying the menu item 600, it returns to the head of a program (Step 700). The menu item 600 which agrees with function / setting-out item judged that an attribute is effective is searched after narrowing down (Step 704) (Step 706), the detected menu item 600 is rearranged, and it displays on the indicator 107 (Step 708).

[0021]If selection decision of one of the menu items 600 displayed on the indicator 107 is carried out (Step 710), The number 620 given to the menu item 600 is checked (Step 712), the processing function 610 matched with the number 620 is called, and a program is executed (Step 714). On the other hand, when neither of the menu item 600 is chosen, it returns to (Step 710) and the head of a program (Step 700).

[0022]The order of a row of the displayed menu item 600 can be rearranged by a user, And even if the order of the serial number 620, the situation 601 - 6XX (attribution information), and a processing

function also interchanges like drawing 5 mentioned above and a desired item is chosen from the menu item by which it was indicated by rearrangement, it cannot be overemphasized that the processing function corresponding to the item is called, and the program concerned is executed. As mentioned above, although the embodiment of the personal digital assistant by this invention was described in detail, this invention is not limited to the above-mentioned embodiment, and can be changed in the range which does not deviate from the gist.

[0023]

[Effect of the Invention]Thus, according to the personal digital assistant by this invention, it is possible to provide the personal digital assistant which makes a menu item legible, without displaying an unnecessary menu screen, and cannot cause a user's confusion easily.

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[Field of the Invention]This invention relates to a personal digital assistant, and it is related with the personal digital assistant which can carry out input selection of the setting-out item function or set up to display on an indicator the menu item made to correspond to a function and a setting-out item, and perform out of the displayed menu item in details more.

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[0005]When a function can set up execution possibility of or a setting-out item, a personal digital assistant by this invention, When it cannot memorize that a function or a setting-out item is effective and a function cannot set up an execution impossibility or a setting-out item, A memory measure which memorizes that a function or a setting-out item is invalid, and a search means to search a function which is effective at the time of input selection, and a setting-out item from a memory measure, An indicator which displays only an effective function and a setting-out item, and a final controlling element to which input selection of the setting-out item which is performed out of a displayed function and a setting-out item, and which is functioned or set up is made, It had an execution means which performs a function in which input selection was made by final controlling element, and a setting-out means to set up a setting-out item in which input selection was made by

final controlling element.

[0006]A final controlling element which carries out input specification of the display order in case a personal digital assistant by this invention displays an effective function and a setting-out item on an indicator, An indicator which displays a function and a setting-out item based on display order by which input specification was carried out, It had a final controlling element to which input selection of the setting-out item which is performed out of a displayed function and a setting-out item, and which is functioned or set up is made, an execution means which performs a function in which input selection was made by final controlling element, and a setting-out means to set up a setting-out item in which input selection was made by final controlling element.

[0007]

[Embodiment of the Invention]Next, with reference to drawing 1 - 7, the embodiment of the personal digital assistant by this invention is described in detail. Drawing 1 is an entire configuration figure showing the personal digital assistant by this invention. Drawing 2 - 5 are the figures explaining a 1st embodiment by this invention, drawing 2 and drawing 5 are the lineblock diagrams of the memory for memory of line menu information, and drawing 3 is a figure showing an example of the menu item displayed on the indicator of the personal digital assistant as a 1st embodiment by this invention. Drawing 4 is a process flow figure of the personal digital assistant by this invention. Drawing 6 and drawing 7 are the figures explaining a 2nd embodiment by this invention, drawing 6 is a lineblock diagram of the memory for memory of line menu information, and drawing 7 is a process flow figure of the personal digital assistant by this invention.

[0008]As shown in drawing 1, in addition to CPU101, ROM103, RAM105, the baseband 111, and RF section 113, the personal digital assistant by this invention is provided with the codec 119, Media Interface Connector(microphone) 115, SP(loudspeaker) 117, the indicator 107, and the key 109. Control of the whole personal digital assistant is performed by CPU101. In ROM103, system data, such as an execution program which performs each function of a main part, and terminal information, are stored, and RAM105 is used as a work area and stores a variable etc. In addition, RF section 113 transmits and receives a radio signal, the baseband part 111 performs the abnormal conditions and recovery of transmission and reception signals, and an A/D conversion (analog to digital) and D/A conversion (digital to analog) are performed by the codec 119. Media Interface Connector115 is equivalent to a voice input part, and SP117 is equivalent to a voice output part. The function with which the main part besides each information with which a main part is provided was equipped, and a setting-out item are displayed on the indicator 107. The key 109 is used when a user inputs and chooses the setting-out item which is performed out of the function displayed on the indicator 107, and a setting-out item and which is functioned or set up.

[0009]Corresponding to each menu item 200, the attribution information which changes with the setups and states of a main part, and the processing function 210 are illustrated by drawing 2. The menu item 200 is related with function / setting-out item. The setups and the state of a main part

change for every user with contractual coverage with an entrepreneur, etc., and changes also with the condition of use (an electric wave (exhaust air) state and a net service state) of a main part. For example, when a radio wave state is bad, the item related to e-mail transmission and reception can also be automatically removed from a menu item. Automatic deletion of the unnecessary menu item in the area where the service network is not built is also possible. The situation 201 - 2XX are defined by the combination of an attribute.

[0010]The menu item 200 has attribution information in the inside respectively, and x is used for O and the menu item which is invalid as the attribution information in drawing 2 at the menu item 200 which is effective. The processing function 210 supports each menu item 200. And if each menu item 200 is chosen, the processing function 210 corresponding to the menu item 200 is called, and it has the composition that the program concerned is executed. As an example, the menu item displayed on drawing 3 (a) by the indicator 107 at the time of situation \*\*201 and the menu item displayed on the indicator 107 at the time of situation \*\*202 by drawing 3 (b) are shown.

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Menu items 200 other than these become non-display.

[0012]Similarly by situation \*\*202 of drawing 2, it adds to direct delivery mail, chat mails, and waiting BOX for transmission (in order to hold transmitting mail temporarily), An information service (a variety of information comes to hand from a mail center), center transmission, and center transmission and reception (e-mail is received for e-mail from transmission or a center to a mail center) are effective. Therefore, six items of direct delivery mail, chat mails, waiting BOX for transmission, an information service, center transmission, and center transmission and reception of the menu item 200 are displayed on drawing 3 (b).

[0013]The processing function 210 is matched with each menu item 200, direct delivery mail -- the function 17 supports [ at the function 14 and center transmission ] the function 12 and chat mails in the function 13 and the information service in the function 16 and center transmission and reception at the function 15 and waiting BOX for transmission, respectively. These processing functions 210 will be called if the matched menu item 200 is chosen, and the program concerned is executed.

[0014]The flow of the internal processing of the personal digital assistant explained above is explained using the process flow figure of drawing 4. If the directions for displaying the introduction menu item 200 are inputted from a final controlling element (in this case, key 109) (Step 402), the setups and the state of a main part will be seen, and conditions will be narrowed down (Step 404). When there are no directions for displaying the menu item 200, it returns to the head of a program (Step 400). The menu item 200 which agrees with function / setting-out item judged that an attribute

is effective is searched after narrowing down (Step 404) (Step 406), the detected menu item 200 is rearranged, and it displays on the indicator 107 (Step 408).

[0015]If selection decision of one of the menu items 200 displayed on the indicator 107 is carried out (Step 410), it will be computed the how many menu items 200 it hits under the present situation (Step 412). On the other hand, when neither of the menu item 200 is chosen, it returns to (Step 410) and the head of a program (Step 400). After calculation (Step 412), the processing function 210 equivalent to the menu item 200 concerned is called, and a program is executed (Step 414). This is explained using drawing 2 and drawing 3.

[0016]It is assumed that the information service was chosen among the menu items of drawing 3 (b). Under situation \*\*202 of drawing 2, an information service hits the 3rd menu item 200. As shown in drawing 2, the processing function 210 with which the attribute is related with the menu item 200 which is validity (O) under situation \*\*202 is six of the functions 12-17. And it understands that it is the function 14 that it is equivalent to the 3rd processing function 210 from a top. Therefore, the function 14 is called based on the process flow shown in drawing 4, and the program concerned is executed. According to this invention, by a user, it can stand in a line and the order of a row of the displayed menu item 200 can be changed. It is drawing 5 which showed this.

[0017]If the turn of chat mails and direct delivery mail is replaced as shown in drawing 5, in connection with it, the situation 503 - 5XX will also interchange and the turn of the function 12 and the function 13 will also interchange. The menu item displayed on the indicator 107 at the time of situation \*\*502 by said exchange is shown in drawing 3 (c). It is assumed that chat mails were chosen from the menu items of drawing 3 (c). As shown in drawing 5, the processing function 510 with which the attribute is related with the menu item 500 which is validity (O) under situation \*\*502 is six, the function 13, the function 12, and the functions 14-17. A top shows that it is the function 13 that it is equivalent to the 1st processing function 510. Therefore, the function 13 is called based on the process flow shown in drawing 4, and the program concerned is executed.

[0018]Next, a 2nd embodiment by this invention is described. Corresponding to the menu item 600, the attribution information which changes with the setups and states of a main part, and the processing function 610 are illustrated by drawing 6. The menu item 600 is related with function / setting-out item, and the serial number (key number) 620 is given to each menu item 600. The setups and the state of a main part change for every user with contractual coverage with an entrepreneur, etc., and changes also with the condition of use (an electric wave (exhaust air) state and a net service state) of a main part. For example, when a radio wave state is bad, the item related to e-mail transmission and reception can also be automatically removed from a menu item. Automatic deletion of the unnecessary menu item in the area where the service network is not built is also possible. The situation 601 - 6XX are defined by the combination of an attribute.

[0019]The menu item 600 has attribution information in the inside respectively, and x is used for O and the menu item 600 which is invalid as the attribution information in drawing 2 at the menu item

600 which is effective. If the processing function 610 supports each number 620 given to each menu item 600 and each menu item 600 is chosen, the number 620 given to the menu item 600 concerned and the corresponding processing function 610 are called, and it has the composition that the program concerned is executed.

[0020]The flow of the internal processing of the personal digital assistant explained above is explained using the process flow figure of drawing 7. If the directions for displaying the introduction menu item 600 are inputted from a final controlling element (in this case, key 109) (Step 702), the setups and the state of a main part will be seen, and conditions will be narrowed down (Step 704). When there are no directions for displaying the menu item 600, it returns to the head of a program (Step 700). The menu item 600 which agrees with function / setting-out item judged that an attribute is effective is searched after narrowing down (Step 704) (Step 706), the detected menu item 600 is rearranged, and it displays on the indicator 107 (Step 708).

[0021]If selection decision of one of the menu items 600 displayed on the indicator 107 is carried out (Step 710), The number 620 given to the menu item 600 is checked (Step 712), the processing function 610 matched with the number 620 is called, and a program is executed (Step 714). On the other hand, when neither of the menu item 600 is chosen, it returns to (Step 710) and the head of a program (Step 700).

[0022]The order of a row of the displayed menu item 600 can be rearranged by a user, And even if the order of the serial number 620, the situation 601 - 6XX (attribution information), and a processing function also interchanges like drawing 5 mentioned above and a desired item is chosen from the menu item by which it was indicated by rearrangement, it cannot be overemphasized that the processing function corresponding to the item is called, and the program concerned is executed. As mentioned above, although the embodiment of the personal digital assistant by this invention was described in detail, this invention is not limited to the above-mentioned embodiment, and can be changed in the range which does not deviate from the gist.

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[Translation done.]

**\* NOTICES \***

- 1.This document has been translated by computer. So the translation may not reflect the original precisely.
- 2.\*\*\*\* shows the word which can not be translated.
- 3.In the drawings, any words are not translated.

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**[Brief Description of the Drawings]**

[Drawing 1]The entire configuration figure showing the personal digital assistant by this invention.  
[Drawing 2]The lineblock diagram of the memory for memory of line menu information.  
[Drawing 3]The figure showing an example of the menu item displayed on the personal digital assistant as a 1st embodiment by this invention.

[Drawing 4]The process flow figure inside the personal digital assistant by this invention.  
[Drawing 5]The lineblock diagram of the memory for memory of line menu information.  
[Drawing 6]The lineblock diagram of the memory for memory of line menu information.  
[Drawing 7]The process flow figure inside the personal digital assistant by this invention.

**[Description of Notations]**

101:CPU  
103:ROM  
105:RAM  
107: Indicator  
109: Key

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[Translation done.]

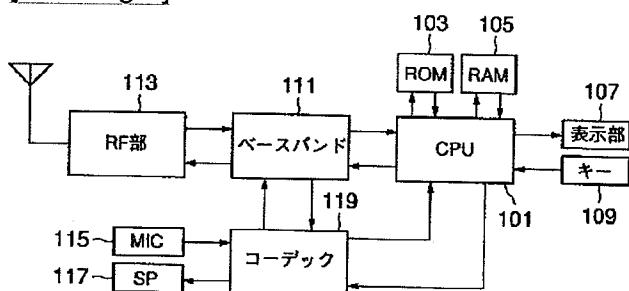
## \* NOTICES \*

1. This document has been translated by computer. So the translation may not reflect the original precisely.

2. \*\*\*\* shows the word which can not be translated.

3. In the drawings, any words are not translated.

[Drawing 1]

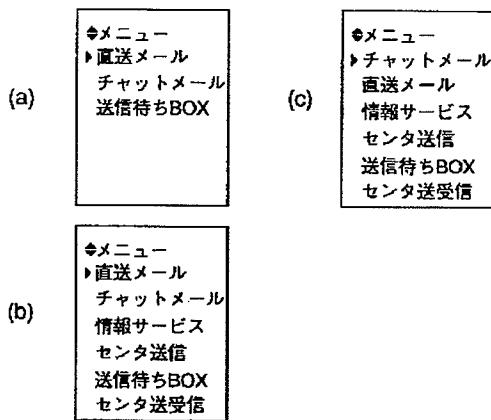


[Drawing 2]

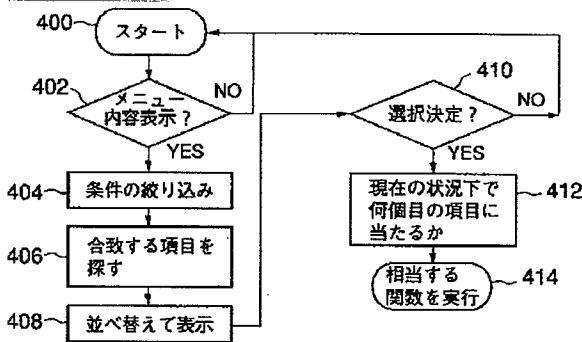
メニュー項目	状況①	状況②	状況③	状況④	状況⑤	..	状況X	処理関数
ON	X	X	O	X	O	..	O	関数1
OFF	X	X	O	X	O	..	O	関数2
..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..
音→振動	X	X	X	O	O	..	X	関数7
..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..
直送メール	O	O	X	O	X	..	O	関数12
チャットメール	O	O	X	O	X	..	X	関数13
情報サービス	X	O	X	O	X	..	X	関数14
センタ送信	X	O	X	X	X	..	X	関数15
送信待ちBOX	O	O	X	X	X	..	O	関数16
センタ送受信	X	O	X	X	X	..	O	関数17
..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..

属性

[Drawing 3]



[Drawing 4]



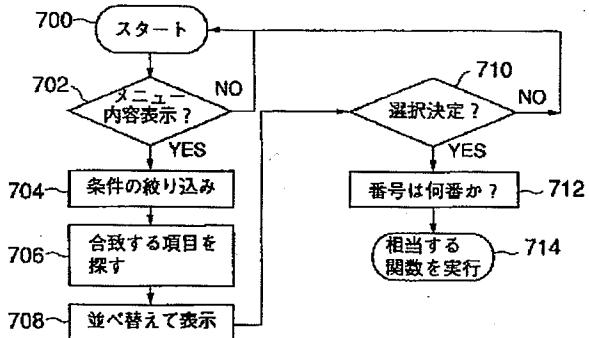
[Drawing 5]

500	501	502	503	504	505	5XX	510	
メニュー項目	状況①	状況②	状況③	状況④	状況⑤	..	状況X	処理関数
ON	×	×	○	×	○	..	○	関数1
OFF	×	×	○	×	○	..	○	関数2
・	・	・	・	・	・	..	..	・
・	・	・	・	・	・	..	..	・
音→振動	×	×	×	○	○	..	×	関数7
順番を変えられる	・	・	・	・	・	..	..	・
チャットメール	○	○	×	○	×	..	×	関数13
直送メール	○	○	×	○	×	..	○	関数12
情報サービス	×	○	×	○	×	..	×	関数14
センタ送信	×	○	×	×	×	..	×	関数15
送信待ちBOX	○	○	×	×	×	..	○	関数16
センタ送受信	×	○	×	×	×	..	○	関数17
・	・	・	・	・	・	..	..	・
・	・	・	・	・	・	..	..	・
・	・	・	・	・	・	..	..	・

[Drawing 6]

	620	600	601	602	603	604	605	6XX	610
番号	メニュー項目	状況①	状況②	状況③	状況④	状況⑤	..	状況X	処理関数
1	ON	X	X	O	X	O	..	O	関数1
2	OFF	X	X	O	X	O	..	O	関数2
..	..	番号を割り当てる		..	..	..	..	..	..
7	音→振動	X	X	X	O	O	..	X	関数7
..	..	..	..	..	..	..	..	..	..
12	直送メール	O	O	X	O	X	..	O	関数12
13	チャットメール	O	O	X	O	X	..	X	関数13
14	情報サービス	X	O	X	O	X	..	X	関数14
15	センタ送信	X	O	X	X	X	..	X	関数15
16	送信待ちBOX	O	O	X	X	X	..	O	関数16
17	センタ送受信	X	O	X	X	X	..	O	関数17
..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..
..	..	..	..	..	..	..	..	..	..

[Drawing 7]



[Translation done.]

(19)日本国特許庁 (JP)

(12) 公開特許公報 (A)

(11)特許出願公開番号

特開2001-109713

(P2001-109713A)

(43)公開日 平成13年4月20日 (2001.4.20)

(51)Int.Cl.<sup>7</sup>  
G 0 6 F 15/00  
3/00  
H 0 4 Q 7/38

識別記号  
3 1 0  
6 5 4

F I  
G 0 6 F 15/00  
3/00  
H 0 4 B 7/26

テ-マコ-ト(参考)  
3 1 0 S 5 B 0 8 5  
6 5 4 B 5 E 5 0 1  
1 0 9 H 5 K 0 6 7

審査請求 未請求 請求項の数9 O.L (全 6 頁)

(21)出願番号 特願平11-284765  
(22)出願日 平成11年10月5日 (1999.10.5)

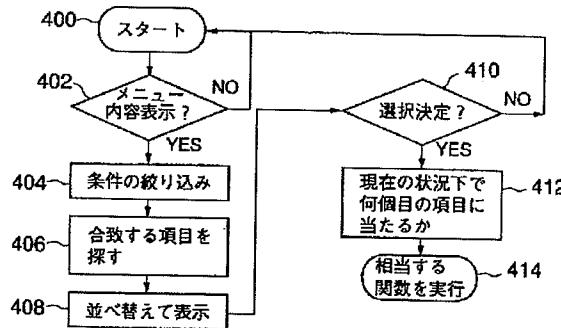
(71)出願人 000003595  
株式会社ケンウッド  
東京都渋谷区道玄坂1丁目14番6号  
(72)発明者 森下 和典  
東京都渋谷区道玄坂1丁目14番6号 株式  
会社ケンウッド内  
(72)発明者 土屋 茂正  
東京都渋谷区道玄坂1丁目14番6号 株式  
会社ケンウッド内  
(74)代理人 100086368  
弁理士 萩原 誠  
Fターム(参考) 5B085 BE07 CE01  
5E501 AA04 BA03 EB05 FA05  
5K067 BB21 EE02 FF22 FF31

(54)【発明の名称】 携帯型情報端末

(57)【要約】

【課題】 メニュー項目を見やすくし、ユーザの混乱を招きにくい携帯型情報端末を提供する。

【解決手段】 メニュー項目を表示するための指示が操作部から入力されると(ステップ402)、本体の設定条件・状態をみて条件の絞り込みを行う(ステップ404)。そして、属性が有効であると判断された機能・設定項目と合致するメニュー項目を検索し(ステップ406)、検出されたメニュー項目を並べ替えて表示部107に表示する(ステップ408)。表示部に表示されたメニュー項目の中のどれかが選択決定されると(ステップ410)、現在の状況下で何個目のメニュー項目200にあたるかを算出する(ステップ412)。算出した後、当該メニュー項目に相当する処理関数を呼び出してプログラムを実行する(ステップ414)。



## 【特許請求の範囲】

【請求項1】 機能及び設定項目に対応させたメニュー項目を有し、前記メニュー項目を表示部に表示し、表示された前記メニュー項目の中から実行したい機能、または設定したい設定項目を入力選択できる携帯型情報端末において、  
前記情報端末の設定条件または端末状態に応じてメニュー項目数あるいはメニュー項目内容が変わることを特徴とする携帯型情報端末。

【請求項2】 請求項1に記載の携帯型情報端末において、  
前記端末状態は、電波（エア）状態または網サービス状態であることを特徴とする携帯型情報端末。

【請求項3】 請求項1に記載の携帯型情報端末において、  
前記設定条件は、事業者との契約内容またはユーザ設定によるものであることを特徴とする携帯型情報端末。

【請求項4】 請求項1に記載の携帯型情報端末において、  
前記機能、前記設定項目に関連付けされている前記メニュー項目は、各々端末の設定状況の組合せからなる属性情報をもっていることを特徴とする携帯型情報端末。

【請求項5】 請求項1に記載の携帯型情報端末において、  
前記メニュー項目は、並び順を変更可能としたことを特徴とする携帯型情報端末。

【請求項6】 請求項5に記載の携帯型情報端末において、  
前記メニュー項目の並び替え操作を行うと、前記情報端末の設定状況の組合せからなる属性情報やメニュー項目に対応した処理関数も入れ替わることを特徴とする携帯型情報端末。

【請求項7】 請求項1に記載の携帯型情報端末において、  
前記設定項目毎に有効・無効を記憶し、有効であるメニュー項目あるいは設定項目のみを表示することを特徴とする携帯型情報端末。

【請求項8】 機能及び設定項目に対応させたメニュー項目を有し、前記メニュー項目を表示部に表示し、表示された前記メニュー項目の中から実行したい機能、または設定したい設定項目を入力選択できる携帯型情報端末において、  
前記機能が実行可能、または前記設定項目が設定可能である場合には、前記機能または前記設定項目が有効であることを記憶し、

前記機能が実行不可能、または前記設定項目が設定不可能である場合には、前記機能または前記設定項目が無効であることを記憶する記憶手段と、  
入力選択時に有効になっている前記機能及び前記設定項目を前記記憶手段から検索する検索手段と、

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有効な前記機能及び前記設定項目のみを表示する表示部と、  
表示された前記機能及び前記設定項目の中から実行する機能、または設定する設定項目を入力選択させる操作部と、

前記操作部によって入力選択された機能を実行する実行手段と、  
前記操作部によって入力選択された設定項目の設定を行う設定手段とを有したことを特徴とする携帯型情報端末。

【請求項9】 請求項8に記載の携帯型情報端末において、

有効な前記機能及び前記設定項目を前記表示部に表示するときの表示順を入力指定する操作部と、  
入力指定された前記表示順に基づいて、前記機能及び前記設定項目を表示する表示部と、  
表示された前記機能及び前記設定項目の中から実行する機能、または設定する設定項目を入力選択させる操作部と、  
前記操作部によって入力選択された機能を実行する実行手段と、  
前記操作部によって入力選択された設定項目の設定を行う設定手段とを有したことを特徴とする携帯型情報端末。

## 【発明の詳細な説明】

## 【0001】

【発明の属する技術分野】 本発明は携帯型情報端末に係り、より詳細には、機能及び設定項目に対応させたメニュー項目を表示部に表示し、表示されたメニュー項目の中から実行したい機能、または設定したい設定項目を入力選択できる携帯型情報端末に関する。

## 【0002】

【従来の技術】 従来の携帯型情報端末は、各機能が使用できる（有効）できない（無効）、各設定項目が設定できる（有効）できない（無効）に関わらず、メニュー項目を表示していた。

## 【0003】

【発明が解決しようとする課題】 しかしながら、機能及び設定項目が設定条件・端末状態等により実際に使えない機能及び設定項目もメニュー項目に含まれるため、メニュー項目が増え、複雑になりユーザーの混乱を招きやすかった。本発明は、不要なメニュー画面を表示させずにメニュー項目を見やすくし、ユーザーの混乱を招きにくくする携帯型情報端末を提供することを目的とする。

## 【0004】

【課題を解決するための手段】 本発明による携帯型情報端末は、上記目的を達成するため、情報端末の設定条件または端末状態に応じてメニュー項目数あるいはメニュー項目内容が変わることを特徴とする携帯型情報端末として構成される。さらに、本発明による携帯型情報端末

の端末状態は、電波（エア）状態または網サービス状態であることを特徴とする。さらに、本発明による携帯型情報端末の設定条件は、事業者との契約内容またはユーザ設定によるものであることを特徴とする。さらに、本発明による携帯型情報端末の機能、設定項目に関連付けされているメニュー項目は、各々端末の設定状況の組合せからなる属性情報をもっていることを特徴とする。さらに、本発明による携帯型情報端末のメニュー項目は、並び順を変更可能としたことを特徴とする。さらに、本発明による携帯型情報端末のメニュー項目の並び替え操作を行うと、情報端末の設定状況の組合せからなる属性情報やメニュー項目に対応した処理関数も入れ替わることを特徴とする。さらに、本発明による携帯型情報端末の設定項目毎に有効・無効を記憶し、有効であるメニュー項目あるいは設定項目のみを表示することを特徴とする。

【0005】さらに、本発明による携帯型情報端末は、機能が実行可能、または設定項目が設定可能である場合には、機能または設定項目が有効であることを記憶し、機能が実行不可能、または設定項目が設定不可能である場合には、機能または設定項目が無効であることを記憶する記憶手段と、入力選択時に有効になっている機能及び設定項目を記憶手段から検索する検索手段と、有効な機能及び設定項目のみを表示する表示部と、表示された機能及び設定項目の中から実行する機能、または設定する設定項目を入力選択させる操作部と、操作部によって入力選択された機能を実行する実行手段と、操作部によって入力選択された設定項目の設定を行う設定手段とを有したことを見出します。

【0006】さらに、本発明による携帯型情報端末は、有効な機能及び設定項目を表示部に表示するときの表示順を入力指定する操作部と、入力指定された表示順に基づいて、機能及び設定項目を表示する表示部と、表示された機能及び設定項目の中から実行する機能、または設定する設定項目を入力選択させる操作部と、操作部によって入力選択された機能を実行する実行手段と、操作部によって入力選択された設定項目の設定を行う設定手段とを有したことを見出します。

#### 【0007】

【発明の実施の形態】次に、図1～7を参照して本発明による携帯型情報端末の実施の形態を詳細に説明する。図1は本発明による携帯型情報端末を示す全体構成図である。図2～5は本発明による第1の実施の形態を説明する図であり、図2及び図5はメニュー情報の記憶用メモリの構成図であり、図3は本発明による第1の実施の形態として携帯型情報端末の表示部に表示されたメニュー項目の一例を示す図である。さらに、図4は本発明による携帯型情報端末の処理フロー図である。また、図6及び図7は本発明による第2の実施の形態を説明する図であり、図6はメニュー情報の記憶用メモリの構成図で

あり、図7は本発明による携帯型情報端末の処理フロー図である。

【0008】図1に示すように、本発明による携帯型情報端末は、CPU101、ROM103、RAM105、ベースバンド111、RF部113に加え、コードック119、MIC（マイク）115、SP（スピーカ）117、表示部107、キー109を備えている。携帯型情報端末全体の制御はCPU101によって行われる。また、ROM103内には本体の各機能を実行する実行プログラム、端末情報等のシステムデータが格納されており、RAM105はワークエリアとして使用され、変数などを格納する。その他、RF部113は無線信号の送受信を行い、ベースバンド部111によって送受信信号の変調及び復調を行い、コードック119によってA/D変換（アナログ→デジタル変換）及びD/A変換（デジタル→アナログ変換）が行われる。また、MIC115は音声入力部、SP117は音声出力部に相当する。表示部107には本体に提供される各情報のほか、本体に備えられた機能及び設定項目を表示する。キー109は、表示部107に表示された機能及び設定項目の中から実行する機能、または設定する設定項目をユーザが入力・選択するときに使用する。

【0009】図2には各メニュー項目200に対応して、本体の設定条件・状態によって異なる属性情報と、処理関数210が図示されている。メニュー項目200は機能・設定項目に関連付けられている。また、本体の設定条件・状態は、事業者との契約内容等によってユーザごとに異なり、本体の使用状態（電波（エア）状態や網サービス状態）によっても変化する。例えば、電波状態が悪いときはメニュー項目からメール送受信に関する項目を自動的に除くことができる。さらに、サービス網が構築されていないエリアでの不要なメニュー項目の自動削除も可能である。また、状況201～2XXは属性の組み合わせによって定義される。

【0010】メニュー項目200は各属性情報を内部にもっており、図2中ではその属性情報として、有効になっているメニュー項目200には○、無効になっているメニュー項目には×が用いられている。各メニュー項目200には処理関数210が対応している。そして、各メニュー項目200を選択すると、そのメニュー項目200に対応している処理関数210が呼び出され、当該プログラムが実行される構成になっている。具体例として、図3（a）に状況①201のときの表示部107に表示されるメニュー項目、図3（b）に状況②202のときの表示部107に表示されるメニュー項目を示す。

【0011】図2の状況①201では直送メール（相手端末に文字メールを送信して電話を切る形式）、チャットメール（相手端末に文字メールを送信後も電話を切らずにメールのやりとりをする形式）、及び送信待ちBO

Xの属性が有効(○)になっている。よって、図3

(a)にはメニュー項目200のうち、直送メール、チャットメール、及び送信待ちBOXの3項目のみが表示される。それら以外のメニュー項目200は非表示となる。

【0012】同様に、図2の状況②202では直送メール、チャットメール、及び送信待ちBOX(送信メールを一時保持するため)に加え、情報サービス(メールセンタより各種情報を入手する)、センタ送信、及びセンタ送受信(メールセンタにメールを送信またはセンタからメールを受信する)が有効になっている。よって、図3(b)にはメニュー項目200のうち、直送メール、チャットメール、送信待ちBOX、情報サービス、センタ送信、及びセンタ送受信の6項目が表示される。

【0013】さらに、各メニュー項目200には処理関数210が対応付けられており、直送メールには関数12、チャットメールには関数13、情報サービスには関数14、センタ送信には関数15、送信待ちBOXには関数16、及びセンタ送受信には関数17がそれぞれ対応している。これらの処理関数210は対応付けられたメニュー項目200が選択されると呼び出され、当該プログラムが実行される。

【0014】上記で説明した携帯型情報端末の内部処理の流れを、図4の処理フロー図を用いて説明する。始めにメニュー項目200を表示するための指示が操作部(この場合キー109)から入力されると(ステップ402)、本体の設定条件・状態をみて条件の絞り込みを行う(ステップ404)。なお、メニュー項目200を表示するための指示がない場合は、プログラムの先頭に戻る(ステップ400)。絞り込み(ステップ404)の後、属性が有効であると判断された機能・設定項目と合致するメニュー項目200を検索し(ステップ406)、検出されたメニュー項目200を並べ替えて表示部107に表示する(ステップ408)。

【0015】表示部107に表示されたメニュー項目200の中のどれかが選択決定されると(ステップ410)、現在の状況下で何個目のメニュー項目200にあたるかを算出する(ステップ412)。一方、メニュー項目200のいずれも選択されない場合は(ステップ410)、プログラムの先頭に戻る(ステップ400)。算出(ステップ412)後、当該メニュー項目200に相当する処理関数210を呼び出してプログラムを実行する(ステップ414)。これを図2及び図3を用いて説明する。

【0016】図3(b)のメニュー項目のうち情報サービスが選択されたと仮定する。図2の状況②202の下で、情報サービスは3個目のメニュー項目200にあたる。図2に示すように、状況②202の下で属性が有効(○)であるメニュー項目200と関連付けられている処理関数210は、関数12~17の6つである。そし

て、上から3個目の処理関数210に相当するのが関数14であるとわかる。よって、図4に示した処理フローに基づいて関数14が呼ばれて当該プログラムが実行される。また、本発明によると、表示されたメニュー項目200の並び順を、ユーザによって並び変えることができる。これを示したもののが図5である。

【0017】図5に示すように、チャットメールと直送メールの順番を入れ替えると、それに伴い、状況503~5XXも入れ替わり、関数12と関数13の順番も入れ替わる。図3(c)に前記入れ替えによる状況⑤202のときの表示部107に表示されるメニュー項目を示す。図3(c)のメニュー項目の中からチャットメールが選択されたと仮定する。図5に示すように、状況⑤202の下で属性が有効(○)であるメニュー項目500と関連付けられている処理関数510は、関数13、関数12、関数14~17の6つである。上から1個目の処理関数510に相当するのが関数13であるとわかる。よって、図4に示した処理フローに基づいて関数13が呼ばれて当該プログラムが実行される。

【0018】次に、本発明による第2の実施の形態を説明する。図6にはメニュー項目600に対応して、本体の設定条件・状態によって異なる属性情報と、処理関数610が図示されている。メニュー項目600は機能・設定項目に関連付けられており、各メニュー項目600にはシリアルな番号(キーナンバー)620が付されている。また、本体の設定条件・状態は、事業者との契約内容等によってユーザごとに異なり、本体の使用状態(電波(エア)状態や網サービス状態)によっても変化する。例えば、電波状態が悪いときはメニュー項目からメール送受信に関する項目を自動的に除くこともできる。さらに、サービス網が構築されていないエリアでの不要なメニュー項目の自動削除も可能である。また、状況601~6XXは属性の組み合わせによって定義される。

【0019】メニュー項目600は各々属性情報を内部にもっており、図2中ではその属性情報として、有効になっているメニュー項目600には○、無効になっているメニュー項目600には×が用いられている。各メニュー項目600に付してある各番号620には処理関数610が対応しており、各メニュー項目600を選択すると、当該メニュー項目600に付された番号620と対応している処理関数610が呼び出され、当該プログラムが実行される構成になっている。

【0020】上記で説明した携帯型情報端末の内部処理の流れを、図7の処理フロー図を用いて説明する。始めにメニュー項目600を表示するための指示が操作部(この場合キー109)から入力されると(ステップ702)、本体の設定条件・状態をみて条件の絞り込みを行う(ステップ704)。なお、メニュー項目600を表示するための指示がない場合は、プログラムの先頭に

戻る（ステップ700）。絞り込み（ステップ704）の後、属性が有効であると判断された機能・設定項目と合致するメニュー項目600を検索し（ステップ706）、検出されたメニュー項目600を並べ替えて表示部107に表示する（ステップ708）。

【0021】表示部107に表示されたメニュー項目600の中のどれかが選択決定されると（ステップ710）、そのメニュー項目600に付された番号620を確認し（ステップ712）、その番号620と対応づけられた処理関数610を呼び出してプログラムを実行する（ステップ714）。一方、メニュー項目600のいずれも選択されない場合は（ステップ710）、プログラムの先頭に戻る（ステップ700）。

【0022】なお、表示されたメニュー項目600の並び順をユーザによって並び替えることができ、かつ前述した図5のようにシリアル番号620や状況601～6XX（属性情報）、処理関数の順も入れ替わり、並び替え表示されたメニュー項目から所望の項目を選択されても、その項目に対応する処理関数が呼ばれて当該プログラムが実行されることは言うまでもない。以上、本発明による携帯型情報端末の実施の形態を詳細に説明したが、本発明は前述の実施の形態に限定されるものではなく、その要旨を逸脱しない範囲で変更可能である。\*

## \*【0023】

【発明の効果】このように、本発明による携帯型情報端末によれば、不要なメニュー画面を表示させずにメニュー項目を見やすくし、ユーザの混乱を招きにくい携帯型情報端末を提供することが可能である。

## 【図面の簡単な説明】

【図1】本発明による携帯型情報端末を示す全体構成図。

【図2】メニュー情報の記憶用メモリの構成図。

【図3】本発明による第1の実施の形態として携帯型情報端末に表示されたメニュー項目の一例を示す図。

【図4】本発明による携帯型情報端末内部の処理フロー図。

【図5】メニュー情報の記憶用メモリの構成図。

【図6】メニュー情報の記憶用メモリの構成図。

【図7】本発明による携帯型情報端末内部の処理フロー図。

## 【符号の説明】

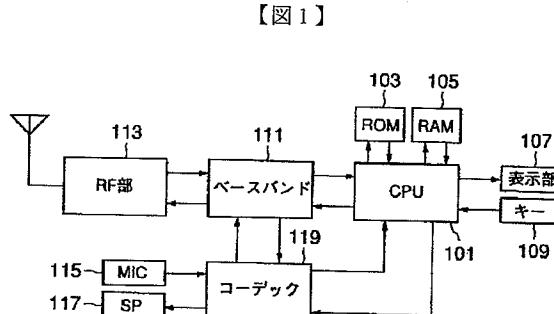
101: CPU

103: ROM

105: RAM

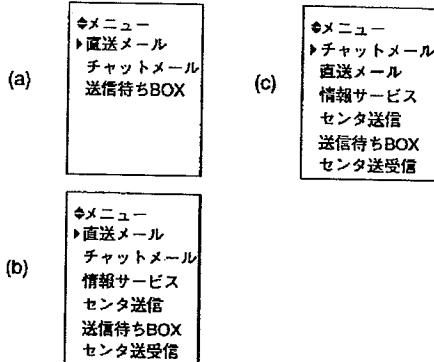
107: 表示部

109: キー



【図1】

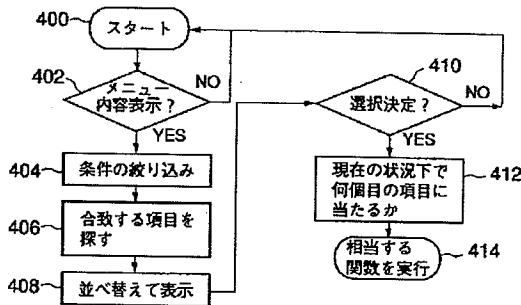
【図3】



【図2】

	200	201	202	203	204	205	2XX	210
メニュー項目	状況①	状況②	状況③	状況④	状況⑤	..	状況X	処理関数
ON	X		O	X	O	..	O	関数1
OFF	X	X	O	X	O	..	O	関数2
..	.	.	.	.	.	..	..	.
音→振動	X	X	X	O	O	..	X	関数7
..	.	.	.	.	.	..	..	.
直送メール	O	O	X	O	X	..	O	関数12
チャットメール	O	O	X	O	X	..	X	関数13
情報サービス	X	O	X	O	X	..	X	関数14
センタ送信	X	O	X	X	X	..	X	関数15
送信待ちBOX	O	O	X	X	X	..	O	関数16
センタ送受信	X	O	X	X	X	..	O	関数17
..	.	.	.	.	.	..	..	.
..	.	.	.	.	.	..	..	.

【図4】



【図5】

500	501	502	503	504	505	5XX	510	状況X	処理関数
ON	X	X	O	X	O	..	O	..	関数1
OFF	X	X	O	O	O	..	O	..	関数2
..	.	.	.	.	.	..	..	..	.
音→振動	X	X	X	O	O	..	X	..	関数7
<b>順番を変えられる</b>									
チャットメール	O	O	X	O	X	..	X	..	関数13
直送メール	O	O	X	O	X	..	O	..	関数12
情報サービス	X	O	X	O	X	..	X	..	関数14
センタ送信	X	O	X	X	X	..	X	..	関数15
送信待ちBOX	O	O	X	X	X	..	O	..	関数16
センタ送受信	X	O	X	X	X	..	O	..	関数17
..	.	.	.	.	.	..	..	..	.
..	.	.	.	.	.	..	..	..	.
..	.	.	.	.	.	..	..	..	.

【図6】

番号	メニュー項目	状況①	状況②	状況③	状況④	状況⑤	..	状況X	処理関数
1	ON	X	X	O	X	O	..	O	関数1
2	OFF	X	X	O	X	O	..	O	関数2
..	..	<b>番号を割り当てる</b>					..	..	.
7	音→振動	X	X	X	O	O	..	X	関数7
..	..	.	.	.	.	.	..	..	.
12	直送メール	O	O	X	O	X	..	O	関数12
13	チャットメール	O	O	X	O	X	..	X	関数13
14	情報サービス	X	O	X	O	X	..	X	関数14
15	センタ送信	X	O	X	X	X	..	X	関数15
16	送信待ちBOX	O	O	X	X	X	..	O	関数16
17	センタ送受信	X	O	X	X	X	..	O	関数17
..	..	.	.	.	.	.	..	..	.
..	..	.	.	.	.	.	..	..	.
..	..	.	.	.	.	.	..	..	.

【図7】

